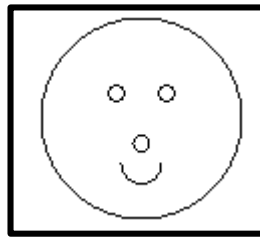
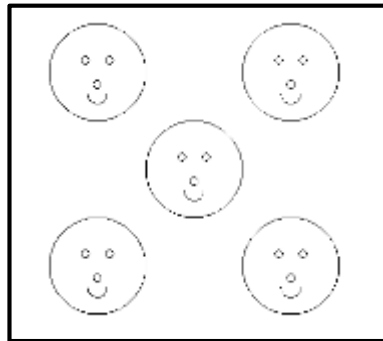

Sheet 8(Hierarchical modeling & interactivity)

1. What is hierarchical modeling? What are its advantages?
2. Write an OpenGL program that draw a face. Model the face simply by one circle for the outline, two circles for the two eyes, one circle for the nose, and one half-circle for the mouse (see the figure below). Your program should use hierarchical modeling implemented by display lists to draw the face.



3. For the program you created in problem 2, modify the code to draw five copies of the face arranged as in the following figure.



4. Explain the role of the following function in GLUT
`glutReshapeFunc(...)`
`glutMotionFunc();`
`glutMouseFunc();`
5. Write an OpenGL program to draw a rectangle of size 3 by 3 units each time the mouse is left-clicked with a color chosen randomly. The program terminates when the user right-click the mouse. Your program should interact correctly even if the user changed the window size.
6. Modify the program in problem 5 to draw the rectangle when the mouse moves while the left button is pressed